CLAIMS

What is claimed is:

1   1.   A system for reassembling asynchronous transfer mode (ATM) data in

2   real time, comprising:

3   a circular buffer for storing ATM data, the ATM data comprising information

4   divided into cells; and

5   a plurality of parallel processing elements configured to analyze the ATM cells

6   and determine a cell type, wherein ATM adaptation layer (AAL) 2 cells and AAL 5

7   cells are reassembled in real-time.

1   2.   The system of claim 1, wherein the circular buffer communicates with

2   the plurality of processing elements simultaneously.

1   3.   The system of claim 2, further comprising a fragmentation table

2   configured to receive and store data fragments associated with an ATM cell.

1   4.   The system of claim 3, further comprising a buffer manager configured

2   to accumulate the data fragments and assemble the data fragments into a frame.

1   5.   The system of claim 4, further comprising a statistics memory

2   configured to store statistics associated with the cells.

1 6.   The system of claim 5, wherein the statistics are chosen from an idle

2 cell, an unassigned cell, an operation and maintenance (OAM) cell, an AAL 2 cell, an

3 AAL 5 cell, a header error correction (HEC) error cell, a frame count, a byte count,

4 congestion information, AAL5 CRC error count, and resource management (RM) cell

5 count.

1 7.   The system of claim 6, wherein the statistics are gathered for each unique

2 VPI/VCI cell stream.

1 8.   The device of claim 7, wherein the statistics are periodically provided to

2 a processor for display.

1 9.   A method for reassembling asynchronous transfer mode (ATM) data in

2 real time, comprising:

3   providing ATM data to a circular buffer, the ATM data comprising information

4 divided into cells;

5   storing the ATM data in the circular buffer;

6   analyzing the ATM cells to determine a cell type, wherein ATM adaptation

7 layer (AAL) 2 cells and AAL 5 cells are reassembled in real-time.

1 10.   The   method   of   claim   9,   further   comprising   simultaneously

2 communicating between the circular buffer and the plurality of processing elements.

1   11. The system of claim 10, further comprising receiving and storing data

2 fragments associated with an ATM cell in a fragmentation table.

1   12. The method of claim 11, further comprising:

2   accumulating the data fragments in a buffer manager; and

3   assembling the data fragments into a frame.

1   13. The method of claim 12, further comprising storing statistics associated

2 with the cells in a statistics memory.

1   14. The method of claim 13, wherein the statistics are chosen from an idle

2 cell, an unassigned cell, an operation and maintenance (OAM) cell, an AAL 2 cell, an

3 AAL 5 cell, a header error correction (HEC) error cell, a frame count, a byte count,

4 congestion information, AAL5 CRC error count, and resource management (RM) cell

5 count.

1   15. The method of claim 14, wherein the statistics are gathered for each

2 unique VPI/VCI cell stream.

1   16. The method of claim 15, further comprising periodically providing the

2 statistics to a processor for display.

1   17.   A computer readable medium having a program for reassembling

2   asynchronous transfer mode (ATM) data in real time, comprising:

3   logic for providing ATM data to a circular buffer, the ATM data comprising

4   information divided into cells;

5   logic for storing the ATM data in the circular buffer;

6   logic for analyzing the ATM cells to determine a cell type, wherein ATM

7   adaptation layer (AAL) 2 cells and AAL 5 cells are reassembled in real-time.

1   18.   The program of claim 17, further comprising logic for simultaneously

2   communicating between the circular buffer and the plurality of processing elements.

1   19.   The program of claim 18, further comprising logic for receiving and

2   storing data fragments associated with an ATM cell in a fragmentation table.

1   20.   The program of claim 19, further comprising:

2   logic for accumulating the data fragments in a buffer manager; and

3   logic for assembling the data fragments into a frame.

1   21.   The program of claim 20, further comprising storing statistics associated

2   with the cells in a statistics memory.

1   22.   The program of claim 21, wherein the statistics are chosen from an idle

2   cell, an unassigned cell, an operation and maintenance (OAM) cell, an AAL 2 cell, an

3   AAL 5 cell, a header error correction (HEC) error cell, a frame count, a byte count,

4   congestion information, AAL5 CRC error count, and resource management (RM) cell

5   count.

1   23.   The program of claim 22, wherein the statistics are gathered for each

2   unique VPI/VCI cell stream.

1   24.   The program of claim 23, further comprising logic for periodically

2   providing the statistics to a processor for display.